

# Power, Structural and Technology Systems

## Course Description:

Provides advanced-level experiences in selected major areas of agricultural mechanics technology; includes small engine maintenance and repair, metal fabrication, concrete construction, building construction, plumbing, electrical wiring, maintenance of agricultural machinery, equipment and tractors, and soil and water conservation. Learning activities include basic understanding, skill development and problem-solving. Classroom and laboratory activities are supplemented through supervised agricultural experiences and leadership programs and activities.

**Course Code:** 016003

## Endorsements to

**teach:** AFNR

## Programs of Study to which this Course applies:

Power, Structural and Technical Systems

Power, Structural and Technical Systems Plus

<b>AFNR.HS.6.1</b>	
<b>Apply physical science principles and engineering applications to solve problems and improve performance in AFNR power, structural and technical systems.</b>	
AFNR.HS.6.1.b	Apply physical science and engineering principles to design, implement, and improve safe and efficient mechanical systems in AFNR situations.
<b>AFNR.HS.6.2</b>	
<b>Operate and maintain AFNR mechanical equipment and power systems.</b>	
AFNR.HS.6.2.a	Perform preventative maintenance and scheduled service to maintain equipment, machinery and power units used in AFNR settings.
AFNR.HS.6.2.b	Demonstrate proper safety while operating machinery and power equipment.
<b>AFNR.HS.6.3</b>	
<b>Service and repair AFNR mechanical equipment and power systems.</b>	
AFNR.HS.6.3.a	Service electrical systems and components of mechanical equipment and power systems using a variety of troubleshooting and/or diagnostic methods.
AFNR.HS.6.3.b	Troubleshoot, service and repair components of internal combustion engines using manufacturer's guidelines.
AFNR.HS.6.3.c	Utilize manufacturers' guidelines to diagnose and troubleshoot malfunctions in machinery, equipment and power source systems.
<b>AFNR.HS.6.4</b>	
<b>Plan, build and maintain AFNR structures.</b>	
AFNR.HS.6.4.a	Create sketches and plans for AFNR structures.
AFNR.HS.6.4.b	Determine structural requirements, specifications and estimate costs of structures.
AFNR.HS.6.4.c	Follow plans to construct, maintain, or repair AFNR structures.
<b>AFNR.HS.6.5</b>	
<b>Use control, monitoring, geospatial and other technologies in AFNR power, structural and technical systems.</b>	
AFNR.HS.6.5.a	Apply geospatial technologies to solve problems and increase the efficiency of AFNR systems.
<b>AFNR.HS.CR.1</b>	
<b>Describe career opportunities and means to achieve those opportunities in each of the AFNR career pathways.</b>	
AFNR.HS.CR.1.a	Evaluate and implement the steps and requirements to pursue a career opportunity in an AFNR career pathway.
AFNR.HS.CR.1.b	Examine and choose career opportunities that are matched to personal life skills, talents, and career goals in an AFNR pathway of interest.
<b>AFNR.HS.CR.2</b>	
<b>Demonstrate employability skills for college and career readiness.</b>	
AFNR.HS.CR.2.a	Model personal responsibility in the workplace and community.
AFNR.HS.CR.2.d	Synthesize information, knowledge and experience to generate original ideal and challenge assumptions in the workplace and community.
AFNR.HS.CR.2.e	Apply reason and logic to evaluate workplace and community situations from multiple perspectives.
AFNR.HS.CR.2.f	Investigate, prioritize and select solutions to solve problems in the workplace community.

AFNR.HS.CR.2.g	Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.
<b>AFNR.HS.CR.3</b>	
<b>Identify and demonstrate personal financial management and planning.</b>	
AFNR.HS.CR.3.a	Design and implement a personal financial management plan.
<b>AFNR.HS.CR.4</b>	
<b>Identify and demonstrate workplace safety.</b>	
AFNR.HS.CR.4.a	Identify and explain the implication of required regulations to maintain and improve safety, health and environments management systems.
AFNR.HS.CR.4.b	Apply health and safety practices to AFNR workplaces.
AFNR.HS.CR.4.c	Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.
<b>AFNR.HS.CR.5</b>	
<b>Evaluate the nature and scope of the AFNR Career Cluster and the role of agriculture, food and natural resources (AFNR) in society and the economy.</b>	
AFNR.HS.CR.5.b	Identify public policies and examine their impact on AFNR systems.
AFNR.HS.CR.5.c	Examine the components of the AFNR systems and assess their impact on the local, state, national and global society and economy.
<b>AFNR.HS.CR.6</b>	
<b>Identify and demonstrate leadership skills and traits in demand of leadership roles in the agriculture industry.</b>	
AFNR.HS.CR.6.b	Craft SMART goals to achieve by the end of a specific agricultural education course.
AFNR.HS.CR.6.c	Write a career objective.
AFNR.HS.CR.6.f	Write and deliver a speech focused on a currently controversial topic within the agricultural industry while arguing both points of view.